Maryland's Net Migration Turns Positive in 2010
Weak Recovery from Great Recession Still Affecting Geographic Mobility

For the first time in seven years more people moved into Maryland than moved out, according to state-to-state migration data from the U.S. Internal Revenue Service.[1] In 2010, just under 2,200 more people moved into Maryland than moved out of the State, a marked contrast from the 7,300 net loss in 2009. Maryland's net out migration had peaked a few years earlier at nearly 24,000 in 2007, the largest outflow in the data series which dates back to 1981. (See **Chart 1**.) The smaller net out migration totals in 2008 and 2009, and the net in migration of 2010, were due largely to the economic consequences of the Great Recession (and lack of a robust recovery), which severely impacted geographic mobility in Maryland and throughout the country.

I. Intra U.S. Out Migration

The reported 2,156 net in migrants to Maryland in 2010 includes net gains from "federal citizens movements"- that is the movement of federal personnel to and from overseas assignments. Subtracting out these gains leaves Maryland with a net gain of 1,949 residents from the rest of the U.S., (or "intra-U.S." migration), a sharp turnaround from the 9,200 intra-U.S. loss in 2009 and an even more dramatic turnaround from the 26,500 net loss in 2007, the peak loss in the data series. (See **Table 1** and **Chart 2**.)

In "typical" years, the net gains and losses for Maryland thru intra-U.S. migration are due in part to the relative strength of the State's economy compared to the U.S. When Maryland's economy is more robust than the national economy, it tends to gain through intra-U.S. migration, and when the State's economy is less dynamic than the nation's economy, it tends to lose through intra-U.S. migration.

A good example of the interaction between economic growth and net migration is what happened in the 2000s. Following the 2001 recession, Maryland had one of the strongest economies in a very weak national picture. Payroll (wage & salary) jobs grew by 0.7 percent in 2002 and 0.4 percent in 2003, ranking the State as sixth and 16th fastest, respectively, in job growth in the U.S, (see **Table 2**) and which coincided with net migration gains to Maryland from other states. While job growth in Maryland improved over the next four years (peaking at 1.3% in 2006), the State's rank for job growth fell to 29th in the U.S. in 2006, and to 35th in 2007 (0.7%) as much of the rest of the U.S. was catching up to, or even exceeding, Maryland's growth rates. And, whereas the State's growth rates in 2002 and 2003 were well above (anemic) national rates, they were below the improving national rates in 2005 thru 2007, leading to net out migration from Maryland to other states.

The impact of the Great Recession (officially from December 2007 to June 2009) on annual job growth began in 2008 with moderate payroll losses of 0.4 percent nationally and in Maryland. The economies of both Maryland and the U.S. became progressively worse during

[1] The source of the state-to-state migration data are geocoded tax returns matched on social security numbers of the main filer, and ZIP Code address in consecutive years. If there is a change in state address from year one to year two, then there is a move, with the number of people associated with the move equal to the number of claimed exemptions.

2009 and led to substantial losses both locally and nationally with the nation's 6.2 million payroll jobs loss (-4.3%) by far the largest decline in the 40-year history of the employment data series. And, unlike the 2001 recession, every single state experienced payroll declines in 2009. Maryland's job decline of 2.9 percent in 2009, while the sharpest loss since 1991, was actually the ninth smallest percentage loss in the nation but provided no real economic advantage over the rest of the U.S. The same could be said for 2010, with Maryland's 0.2 percent decline smaller than the national 0.5 percent loss and was ranked 17th, but there were 12 states with no job losses. (See **Table 2.** See also the **Statistical Evidence for Economic Migration** below, for a discussion on the relationship between the State's economy and migration).[2]

Playing a more prominent role in the larger net out migration from Maryland in the middle part of the 2000s was the run up in housing costs in the State compared to bordering counties in neighboring states, but particularly to those counties in Pennsylvania. This net out migration peaked in 2006 and has dropped steadily since then as the Great Recession and the deflating housing bubble severely curtailed geographic mobility. In essence, those who wanted to move had the extra burden of trying to sell an existing home with few buyers, or those who wanted to purchase a new home in a new location had to deal with a very tight mortgage lending environment. All of these impediments to buying and selling homes was compounded by job losses everywhere in the U.S.

All in all, the Great Recession (and the anemic recovery which followed) reduced both in-migrants to Maryland and out migrants from Maryland, but with the greater reduction to the latter. For instance, between 2006 and 2010, the flow of in migrants to Maryland from other states dropped by just under 10,900 (-7.9%) while the number of Maryland residents moving to other states fell by 32,750 (-20.8%). (See **Chart 3** for in and out flows for Maryland over the 1997 to 2010 period.)

II. Regional Migration

For the first time in seven years Maryland experienced net in-migration from three of the four major regions of the U.S. in 2010, with net out migration only to the Southern Region. And even the net out migration to the Southern Maryland Region was substantially reduced from earlier years. (See **Table 3**.)

II.1 Large Increase from the Northeast Region

Maryland had a net gain of just over 4,500 residents from Northeast Region states, nearly four times the net inflow in 2009 and the largest net gain since 2002. The net in-migration gains for Maryland in 2009 and 2010 followed three successive years of net out migration (2006 to 2008), the only time in the 30 years of the data series in which Maryland had net out migration to this Region. One of the main drivers of the net out migration to the Northeast Region in the 2006 thru 2008 period, as well as the return to net in migration in 2009 and 2010, was the interaction between Maryland and Pennsylvania. In 2010, Maryland had a net loss of 851residents to Pennsylvania the smallest net outflow in nine years and less than one-tenth the peak net outflow of 8,849 in 2006.

[2] Economic net migration in a migration year is seen as being related to economic growth (as measured by job change) in the **prior year** (e.g. migration in 2009 and job growth in 2008).

Maryland has now had net population losses to Pennsylvania for 22 straight years (since 1989) with the largest net outflows occurring between 2003 and 2008. (See **Chart 4**.) Much of the surge in losses to Pennsylvania after 2003 were due to Maryland residents seeking the relatively lower housing costs in the bordering Pennsylvania counties of York, Adams, Lancaster and Franklin, from Baltimore, Carroll, Harford and Frederick counties in Maryland. For example, according to the U.S. Census Bureau's 2008 American Community Survey, the median value of owner occupied housing units for York, Franklin, Adams and Lancaster counties in Pennsylvania were well below the median values in Washington, Baltimore, Harford, Carroll and Frederick counties in Maryland. (See **Chart 5.**) Moreover, the gain in value since 2000 was smaller in the Pennsylvania counties than in the Maryland counties. (See **Chart 6.**)

The continued net out migration from Maryland to Pennsylvania, particularly during the housing bubble period, has led many of these former Maryland residents to commute back into Maryland for work. For instance, between 2000 and the 2006-2008 period, the number of Pennsylvania residents commuting to Maryland for work increased by just over 16,000, or 39 percent.[3]

Since the late 1980s, the overwhelming bulk of the gains to Maryland from the Northeast Region have come from **New York** and **New Jersey.** This has remained true in the most recent year, with a net gain of 1,846 **New York** residents. But while the 2010 gain was nearly 500 greater than in 2009, it was well below annual net in migration flows in prior years. For instance, net migration from New York was strongest during the 2001 to 2005 period when Maryland averaged annual net gains of just over 3,850 residents, the highest annual average over any consecutive five-year period since the beginning of the data series in 1981. The strong gains from New York over the 2001 to 2005 time period coincided with severe economic hardships in that State, which was characterized by three successive years of wage and salary (payroll) job losses in the 2001 to 2003 period. Population gains to Maryland from New York moderated in 2006 and 2007 as New York's job growth became more robust.

The gains from **New Jersey** to Maryland in 2010 (2,337) were just over 800 more than in 2009, and were the second highest in the data series. The large increase from New Jersey is mostly due to the initial impact of the movement of approximately 9,000 federal defense jobs from Ft. Monmouth, New Jersey to Aberdeen Proving Grounds in Harford County. The movement of these jobs was completed by the end of 2011 and thus it is anticipated that net in migration from New Jersey in 2011 will be higher than in 2010.

Maryland had a net gain of 375 residents from **Massachusetts** in 2010, up 200 from 2009 and 300 from 2008, but the gains in those two years were the lowest since 2000. Also from the New England area, there was a net gain of 507 residents from **Connecticut** to Maryland in 2010, substantially above the 277 gain in 2009 and the highest net inflow since 1993. Connecticut is one of the few states in which Maryland has always had a net gain in each of the last 30 years. These gains were strongest during the late 1980s and early 1990s, when Maryland averaged a net increase of 530 residents per year from Connecticut over the 1987 to 1993 period. In contrast, from 2002 to 2009 the gains to Maryland were between 100 and 300 per year.

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[3] Maryland Department of Planning analysis of 2006-2008 county-to-county commutation data from the American Community Survey. See: **2006-2008 American Community Survey – Census Transportation Planning Package (CTPP).**

II.2. Net Inflows from North Central Region Surge from Recent Lows

Maryland's net gain of just over 2,600 residents from the North Central Region in 2010 was nearly 400 more than in 2009 and was the largest net inflow since 1989. (See **Table 3**.)

Over the last 30 years Maryland has had periods of gains and losses with the North Central Region that were highly correlated with the comparative economic health of the states in this Region and Maryland. For instance, Maryland averaged net gains of just under 3,500 per year over the 1981 to 1990 period from the North Central Region, a time when Maryland was growing very robustly (after 1983). In contrast, over the 1991 to 1999 period, when Maryland's economy lagged much of the U.S. for a good portion of this nine-year period, the State averaged a net loss of just under 1,100 residents to this Region.

In the 2000s, many of the manufacturing and agriculture-dependent states in the North Central Region were some of the first areas in the country to experience job losses that eventually evolved into the 2001 recession (officially lasting from March to November of 2001). In contrast, Maryland's economy was doing much better than most of the U.S., particularly in the early years of the 2000s which again led to migration gains to Maryland from this Region.

The larger overall gain to Maryland in 2010 came about with net gains from eight out of the 12 states in the Region, with the bulk of the gain coming from the East North Central states of **Michigan** (794), **Ohio** (646) and **Illinois** (561). All three states have had prolonged economic woes, with Michigan having lost payroll jobs every year in the 2000 to 2010 decade – the worst economic performance in the country. In 2008 Michigan experienced a 2.6 percent decline in payroll jobs (the second largest in the U.S.) and was a significant factor in Maryland's 2009 gain of 1,067 residents from Michigan being the largest in the 30 years of the data series.

Ohio's economy, while not quite as hard hit as Michigan's, has also been severely affected with payroll job losses ranked 50th in 2007, 46th in 2008 and 40th in 2009. As a result, the combined net gain to Maryland from Ohio residents from 2008 thru 2010 (1,461) was the largest three-year total since 1987-1989.

The 561 net gain from **Illinois** to Maryland in 2010 was the largest in seven years. As recently as 2008 Maryland had a small net outflow (-40) to the State. Job declines in 2008 and 2009 in Illinois that were worse than the national average (and worse than in Maryland) led to increasing net inflows to Maryland in 2009 and 2010. Like with many other states, the growth of net in migration to Maryland from Illinois was more a function of smaller outflows from Maryland than larger inflows to Maryland.

II.3. Losses to the Southern Region Continues to Moderate

Maryland had a net loss of 6,459 residents to the Southern Region in 2010, just over one-half (53.7%) of the 2009 net outflow and the smallest net outflow in seven years. As recently as 2007 Maryland had a record net outflow of nearly 22,000 residents to the Southern Region. Maryland has now had net losses to the Southern Region for eight consecutive years following two years of modest net gains in 2001 and 2002. Over the last 30 years Maryland has typically experienced net losses to the Southern Region, with the only gains (other than in 2001 and 2002) coming in the 1984 to1990 period when Maryland had one of the strongest economies in the country.

The smaller net outflows to the Southern Region from Maryland in 2010 were due in large part to substantially smaller net outflows to a number of states, including **North Carolina, South Carolina**, **Georgia** and **Texas**. Lack of job growth in these southern states and the collapse of the housing market, making it difficult for people to either buy or sell homes, are behind these reduced outflows.

The net outflow of 1,071 residents to **North Carolina** from Maryland in 2010 was 1,230 less than in 2009 and was the smallest net outflow in eight years. Maryland has always had net out migration to North Carolina, but, as with many such states, the volume of this outflow has grown or receded depending on general economic conditions. For instance, net losses to North Carolina averaged just under 2,400 per year during the 1992 to 1998 period when Maryland's job market was growing more slowly than the U.S. in general. Post 1998, annual outflows declined substantially, reaching a low of just over 100 by 2001 when Maryland was doing substantially better than most of the rest of the U.S. and North Carolina was experiencing job losses. Since 2001, net outflows to North Carolina steadily increased through 2007 with a peak net outflow of 6,719. Some of the net outflows to North Carolina over the last five years may also have had a retirement component, as North Carolina is one of the principal destinations of Maryland retirees.[4]

There was a net outflow of 775 Maryland residents to **South Carolina** in 2010, more than 300 less than in 2009 and the smallest net outflow since 2003. The smaller net outflow in 2010 is emphasized by the fact that prior to 2009 net outflows from Maryland to South Carolina exceeded 2,000 in each of the three previous years, the only time this has happened in the data series. South Carolina's economy was strong up until 2007 but in 2008 (-0.6%) and 2009 (-5.4%), had payroll declines that exceeded Maryland's (-0.4% in 2008 and -2.9% in 2009). But like North Carolina, there also may be a growing retirement component to this migration to South Carolina in better times.

The 860 net outflow to **Texas** in 2010 was nearly 1,000 less than in 2009 and was the smallest in five years. Employment losses in Texas in 2009 (-2.7%), although modest by national standards, made the State a much less attractive destination for those seeking work. Maryland has now had net out migration to Texas over the last six years, which followed modest net gains over the previous five years.

Historically the interaction between Maryland and Texas has followed the path of the relative health of each state's economies. For instance, migration to Maryland from Texas was very high in the late 1980s as Maryland was near the top of the U.S. in total job creation, ranking as high as number two in 1987 compared to 30th for Texas (and 47th in 1986). This difference in economic vitality led to the net inflow of over 6,000 Texas residents to Maryland in 1987 and 1988. In contrast, in the 1990s, up through 1998, Maryland was consistently below national job growth rates while Texas was well above. As a result, from 1992 to 1998 Maryland had on average for each year a net outflow of nearly 1,100 residents to Texas. More recently, between

[4] Table 7, Page 25, "**The Dynamics of Elderly and Retiree Migration Into and Out of Maryland, Task Force Report. 2006**."

2005 and 2008, job growth in Texas was among the top ten nationally. This job growth was a factor in total net out migration of Maryland residents to Texas (-8,500) over the 2006 to 2009 period (the year's most closely associated with job growth from 2005 to 2008) being the highest four-year total in the data series.

II.3.1 Reversal of Net Migration Flows for Georgia and Tennessee

Maryland had rare net inflows from two southern states in 2010, Georgia and Tennessee. The 280 net inflow of residents from **Georgia** to Maryland in 2010 was the first net gain from that State in the 30-year data series. Only three years ago Maryland had a net loss of 3,275 residents to Georgia, the largest in the data series. As with many of the Southern states, the effects of the Great Recession were felt more on the outflow from Maryland. For instance, between 2008 and 2010 the number of in migrants from Georgia to Maryland rose by 762, while the number of out migrants to Georgia from Maryland fell by 2,793.

Maryland's small net inflow of 21 residents from **Tennessee** in 2010 was a reversal of the 383 net loss in 2009, and was the first net gain from this State since 2001. Like most of the southern states, net out migration from Maryland had been on the upswing over the 2003 thru 2007 period before beginning to slow in 2008. Maryland has experienced net losses to Tennessee in all but five out of the last 30 years.

II.3.2 Net Outflows Decline to Bordering States in the Southern Region

Net outflows to Virginia, West Virginia and Delaware all declined in 2010 compared to 2009. Net outmigration to **Virginia** in 2010 (-3,424), was nearly 400 less than in 2009, but still relatively high from a historical perspective. As one of Maryland's bordering states, there have been substantial fluctuations in the net flows between Maryland and Virginia over the last nine years, ranging from a net gain to Maryland of over 2,000 in 2002 to a net loss of just over 4,200 Maryland residents in 2008. These fluctuations are driven to a large extent by the interactions of very dynamic housing and job markets in the adjacent counties in Maryland and Northern Virginia, principally, Montgomery and Prince George's counties in Maryland and Alexandria City and Fairfax, Arlington, Prince Williams and Loudoun counties in Virginia. Since housing is generally more expensive in Northern Virginia compared to Maryland, it is most likely that economic factors (such as job growth) also play a major role. Unlike the interaction between Maryland and most states, the economic downturn has had a greater impact on reducing the in migration to Maryland from Virginia than on reducing the out migration flow to Virginia from Maryland.

For **West Virginia**, the nearly 1,700 net out migration of Maryland residents to this State was about 400 less than in 2009 and was the smallest net outflow in eight years. Maryland has experienced net out migration to West Virginia in all but one year (1986) since 1981. While there probably is some economic migration component in the ups and downs of the net out migration flows over the last 30 years, more affordable housing (and even retirement migration) probably plays an equally important role. This is most likely the case over the period of the expanding housing bubble when net out migration to West Virginia accelerated, tied into the availability of more inexpensive housing in Berkley and Jefferson counties in West Virginia compared to Montgomery, Frederick and Washington counties in Maryland (the three Maryland counties which showed the largest increases in out migrants to West Virginia during the housing bubble expansion).

Maryland's net loss to **Delaware** in 2010 (-582) was nearly 400 less than in 2009 and was the smallest since 1998. As recently as 2007 the net outflow to Delaware hit a series peak of 2,130 and was particularly strong between 2005 and 2008 (with each year exceeding 1,500). These sustained large outflows from Maryland corresponded with the booming housing market and may well have been fueled in part by retirement or near-retirement migration. The sharp reduction in 2009 and 2010 was primarily the result of the continued lackluster housing market. Most of the net out migration to Delaware comes from the Baltimore and Washington regions (particularly Anne Arundel, Baltimore, Montgomery and Prince George's counties).

II.3.3 Net Outflow to Florida Increased from a Record Low

Florida was one of the few states in which Maryland had an increase in net out migration in 2010 (-1,459) compared to 2009 (-928). However, the net outflow in 2009 was a record low in the 30-year data series. The path to that record low in the years preceding 2009 was quite dramatic and clearly illustrates the effects of the Great Recession and the collapse of the housing bubble.

Maryland has always had net out migration to Florida as that State is both a retirement and economic magnet for Maryland residents as well as for the rest of the country. The nearly 138,200 total net out migration from Maryland to Florida over the last 30 years is by far the largest from Maryland to any other state, nearly two and a half times the next largest outflow (to North Carolina at 55,734).

There has been some "ebb and flow" of the magnitude of the outflow to Florida over the years with most of this variation tied to the relative strength of Maryland's economy. For the most part, the lower outflows from Maryland have been during periods of relative local prosperity, such as the late 1980s (annual average of 4,387 over the 1986-1990 period when Maryland's economy was strong) compared to the five prior years (annual average of 5,165 over the 1981 to 1985 period when Maryland's economy was relatively weak). The more recent surge over the 2003 to 2006 period in the net outflows to Florida (averaging 6,200 per year) may well have had to do with Maryland no longer having one of the strongest economies in the country, but may also be a harbinger of an increasing wave of retirees that will expand when the baby boomers begin to retire in larger numbers within a few years.

The reduction in net outflows from Maryland to Florida since the all time peak of nearly 7,500 in 2005 was probably due, in part, to the three damaging hurricanes in Florida in 2005 and the corresponding rise in homeowner insurance rates. The rise in rates, along with one of the nation's most overheated housing markets due to rampant speculation, made re-locating to Florida more costly and therefore, less attractive. Later in the decade, the increased difficulty for perspective migrant homeowners to sell their current homes also contributed to the continued fall in net out migration from Maryland to Florida. Additionally, by 2007 Florida began to experience payroll job declines for the first time since 1991 and in 2008 its 3.3 percent decline in payroll jobs was the worst in the nation while the 6.0 percent decline in 2009 was ranked 48th.

II.4. Pick up in Gains from Washington, D.C.

Maryland had a net gain of 3,200 residents from **Washington, D.C**. in 2010, about 450 more than in 2009, but the second lowest gain in the data series (after 2009). In general, the net gains from Washington, D.C. to Maryland from 1999 forward have been much smaller than in prior periods. For example, for the 12-year period between 1987 and 1998, Maryland averaged a net gain of 10,900 residents per year from Washington, D.C. From 1999 to 2010, that annual net gain was reduced to 6,500 per year, and over the last three years to 3,600 per year.

In general, the smaller migration gains to Maryland from the District since 1999 may well be an indication that Washington, D.C. is now perceived as a more attractive place in which to live. For example, the Taxpayer Relief Act of 1997 gave first-time homebuyers a $5,000 tax credit for buying in Washington, D.C. Additionally, as evidence of the improving quality of life in the District, there was an 18.3 percent drop in the violent crime rate, a 25.8 percent drop in the property crime rate and a 44.4 percent drop in the murder rate per 100,000 inhabitants between 1999 and 2010, although it should be pointed out that the District still ranks number one in these crime rates among all of the states through 2008.[5]

Even though net migration gains from Washington, D.C. are substantially less since 1999 compared to prior periods, they still represent far and away the most important source of new domestic migrants into Maryland. Washington D.C.'s importance to Maryland's migration stream is made clear once the net inflows from the District are subtracted out of total intra-U.S. flows. In 2010, for example, Maryland had a net loss of 1,300 residents to the rest of the U.S., about 10,700 less than in 2009 but the eighth consecutive outflow in the data series. (See **Chart 7**.) Net outflows to the rest of the U.S. have been typical for Maryland over the last 30 years. Besides the 4,900 net intra U.S. gain (less Washington, D.C.) in 2002 and the 1,000 net gain in 2001, there were only six other years (1984 – 1989) in which Maryland had a net inflow of residents from the other 49 states combined. These six years in the 1980s generally corresponded to a period when Maryland's economy was one of the strongest in the nation, as was the case in 2001 and 2002, although in this more recent time period Maryland's above average economic health was in a generally very sluggish national context.

II.5. Net Migration Turns Positive from the West Region

Maryland's net gain of 1,272 residents from the Western Region in 2010 was a sharp change from the nearly 600 loss in 2009 and was the first net gain from this Region in seven years. As recently as 2008, Maryland had a net outflow of just over 3,000 residents to the Western Region, the fourth largest in the data series.

Much of the change in the direction of net migration between Maryland and the West Region is due to the interaction between Maryland and **California**. In 2008 Maryland had a net loss of 703 residents to California (the largest net loss since 1986) and by 2010 the State had a net gain of 833 California residents, the largest since 2003. This change in the direction of the net migration flow corresponded with a deteriorating California economy which saw that state experience a 1.1 percent decline in payroll jobs in 2008, (ranked 45th) and a 5.5 percent decline in 2009 (ranked 44th).

[5] Source: FBI, prepared by the Disaster Center.com (**www.disastercenter.com/crime/dccrime.htm**)

Although the shift in the net flow with California was the most dramatic among the Western states, there was also a change in direction of net migration from net out flows to net inflows in four other states between 2009 and 2010: **Utah**, **Washington**, **Nevada** and **Arizona**. The collapse of the housing bubble and the substantial job losses has been particularly devastating to Arizona and Nevada. For instance, Maryland had a nearly 800 outflow to Arizona in 2006, the second highest total for the data series and near the height of the housing bubble. By 2010, however, Maryland had a net gain of 123 residents from Arizona, the largest net inflow of the data series.

Similarly for Nevada, the nearly 400 net loss of Maryland residents in 2007 (the second largest in the data series) declined in subsequent years until 2010 when Maryland had a small net gain (for the first time) of 37.

II.6. Net Federal Citizens Movement

The federal citizens movement category showed a net gain of just over 200 residents to Maryland in 2010, about 1,800 less than in the previous year and the smallest gain since 1990. (See **Table 1** and **Chart 8.**) In Maryland, this component of migration primarily tracks the movement of Department of Defense personnel and their dependents to and from overseas assignments. In some IRS migration tables this category is referred to as "foreign." However, it should be emphasized that for the most part this category for Maryland does **not** track the movement of foreign immigration (although it may include migration to and from Puerto Rico, the U.S. Virgin Islands and other U.S. possessions).[6]

In the beginning of the 1990s, the combination of the end of the Cold War and the need to shrink U.S. budget deficits resulted in overseas troop reductions that led to an average annual gain of 4,000 personnel to Maryland from 1991 to 1995. Net inflows in this category have also been relatively high over the 1999 to 2003 period, averaging close to 3,800 per year. In contrast, over the last four years the average gain to Maryland has been around 2,000 per year.

III. Statistical Evidence for Economic Migration

In the past there has been a fairly close correlation between the annual state-to-state IRS net migration inflows and outflows and the peaks and valleys of Maryland's economy. That is, net in migration to Maryland was strongest in the mid-to-late 1980's when the State's rate of job and personal income growth was one of the fastest in the U.S. Conversely, when Maryland's economy was losing jobs at a faster rate than the U.S. as a whole, and as personal income was declining or growing substantially more slowly than the U.S. (as happened in the early 1990s), net migration tuned negative and continued to remain negative as the State's recovery lagged the rest of the U.S. It is only when Maryland's economy grew faster than the overall U.S. economy in 1999, did net intra-U.S. migration turn positive in 2000.

[6] Data for Puerto Rico or the U.S. Virgin Islands are not reported separately in the state-to-state migration data. However, from the 2010 county-to-county data, the movement to and from Puerto Rico accounted for a net gain of only 80 residents to Maryland while no flows were reported for the U.S. Virgin Islands. It is possible, however, that there was additional migration between these two locations and Maryland that was not reported at the county level because of confidentiality reasons.

Linear regression analysis lends support to this relationship between net interstate (or "intra U.S.") migration and relative economic vitality. Net interstate migration, the dependent variable, is represented by Maryland's net domestic migration *not including the flows to and from Washington, D.C.*[7] Economic vitality, the independent variable, is represented by the percentage point differential between Maryland and U.S. annual growth rates, *lagged one year from the net interstate migration year* for: i) total jobs by place of work and ii) total personal income.

The results of this relationship are very good *through 2002*, with an adjusted R^2 of .869 and with all coefficients statistically significant at the 95 percent confidence interval.[8]

III.1. Economic Relationship Weakens Over Last Five Years

Chart 9 shows the personal income growth rate differential between Maryland and the U.S. and net intra U.S. migration less Washington, D.C. **Chart 10** substitutes the growth rate differential for jobs in place of personal income. From these charts it does appear that there may be less of a direct relationship in the 2003 through 2008 time period than in some of the prior years, before the relationship strengthens again in 2009. That is, one would have expected there to be net interstate gains, or at least lower net interstate losses for Maryland in the 2003 to 2008 period given Maryland's job and personal income growth relative to the U.S.

And indeed, the statistical relationship between migration and job and personal income growth has deteriorated over the course of the decade as evidenced by the lower R^2s after 2002, but particularly after 2004. (See **Chart 11.**) For instance, the R^2 value declines from .869 for the 1981 thru 2002 period to .634 for the 1981 to 2010 period.[9]

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[7] Excluding the interaction from Washington, D.C. from the interstate totals (which produces a better fit) makes intuitive sense since the flows from Washington, D.C. to Maryland are not as strongly related to the business cycle as is the movement between Maryland and most other states. To a great extent, these two areas share the same labor market, making migration between the two to depend more on the locational preferences of individuals.

[8] For t = 1981 to 2002, net intra-U.S. migration not including Washington, D.C. in year t with percentage point growth differential between Maryland and U.S. for personal income and job growth for year (t-1):

$$\text{Net MigLessD.C.}_{(t)} = \underset{(-9.38)}{-8.51} + \underset{(4.91)}{544.08}\text{*PctPtDiff\_PI.Growth}_{(t-1)} + \underset{(3.74)}{430.19}\text{*PctPtDiff\_Job\_Growth}_{(t-1)}$$

adj R^2 = .869

Note: numbers in parenthesis are the t-statistics for the coefficients

[9] For t = 1981 to 2010

$$\text{Net MigLessD.C.}_{(t)} = \underset{(-8.37)}{-11.97} + \underset{(3.31)}{561.25}\text{*PctPtDiff\_PI.Growth}_{(t-1)} + \underset{(2.02)}{397.85}\text{*PctPtDiff\_Job\_Growth}_{(t-1)}$$

adj R^2 = .634

Higher than expected net out migration over the 2002 thru 2008 period may be because even though Maryland was growing faster than the rest of the U.S. early in the decade (e.g. in 2003 which would influence migration for 2004), jobs were not plentiful here either.

A second and probably more important reason for the higher out migration from Maryland over the 2002-2008 period is that much of the significant increases in net out-migration to bordering states, like Pennsylvania and West Virginia, were due to the availability of more affordable housing compared to what was available in Maryland counties bordering these states. Moving to some of these counties just across the border from Maryland allows these migrants to still remain in the same labor market but reside outside of Maryland. In fact, when Maryland's net migration with Pennsylvania and West Virginia are also taken out of State totals for the 2002 thru 2008 period, a time of accelerating housing costs in Maryland, the explanatory power of the equation is increased with the adjusted R^2 increasing to .835 from .649 and with all coefficients statistically significant at the 95 percent confidence interval.[10]

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[10] For net intra-U.S. migration not including Washington, D.C. in year t AND not including Pennsylvania and West Virginia for years 2002 through 2008, with percentage point growth differential between Maryland and U.S. for personal income and job growth for year (t-1):

$$\text{Net MigW/O\_D.CPA\&WVA.}_{(t)} = \underset{(-11.02)}{-9.88} + \underset{(5.42)}{608.51}\text{*PctPtDiff\_PI.Growth}_{(t-1)} + \underset{(3.22)}{395.05}\text{*PctPtDiff\_Job\_Growth}_{(t-1)}$$

$adjR^2 = .835$

Note: numbers in parenthesis are the t-statistics for the coefficients